



# Techno-solutionism a Fact or Farce?

A Critical Assessment of GenAI in Open  
and Distance Education

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## Keywords

GenAI, techno-solutionism, academic integrity, ODE, critical theory of technology

## Abstract

Techno-solutionism (Ts) amplifies academic integrity issues endemic to using Generative AI in Open and Distance education (ODE). It (Ts) induces in Higher education (HE) the disposition that technology can and should be employed in every aspect of teaching, learning, and assessment. The prevalence of Ts in ODE and the consequence of undermining academic integrity is found in the surge in published papers. A 2023 study by Nature of over 1600 scientists reports that nearly 30% use GenAI to write papers, and 5% use it in grant applications. A 2024 Originality.ai report on 13,000 analysed papers on arXiv indicates a sudden increase of 200.42%, 44.68% and 22.04%, respectively, in Computer Science, Physics and Mathematics in papers published in Jan. 2019 and those published in Nov. 2023. Apr. 2024 paper on arXiv notes Computer Science to be the most prolific in LLM usage with up to 17.5% increase. The problem this study addresses is balancing the challenges and opportunities of GenAI in ODE. Is there a limit to AI use in ODE? How can we upsurge academic integrity in the age of AI? How might we rethink the culture of publish or perish in the age of AI? Adopting the scoping review methodology and discourse analysis, this paper analyses the gains and pains of AI in ODE. Leveraging the critical theory of technology, it recommends clear green and red lines on using AI in teaching, research, and assessment.

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## 1. Introduction

Generative AI, a type of narrow or weak AI, benefits teaching, learning, research, and assessment in amazing ways. Some of its benefits include providing contextualised and democratised learning, easier availability, data generation, automation of repetitive tasks, and support for new language learners. However, these opportunities also come with challenges, including a lack of trust and honesty in academic relations, safety and security of sensitive data, bias, widening of the digital disparity, and inaccurate information. This paper discusses these opportunities and challenges with a special focus on the challenge of perceiving and using technology as the ultimate way out of every task (techno-solutionism) in higher education and the attendant lowering of academic standards.

Analyses of instances of techno-solutionism challenge and potential solutions to ameliorate them, such as having clear and distinct guidelines on when AI tools could be used, the extent of use, what constitutes unethical use and justification/declaration of use are presented. This is in addition to asking critical questions regarding the cognitive abilities we need to have as humans which should be preserved in the face of AI. Reinterpreting Bloom's taxonomy, this paper makes a case for abilities such as creation, evaluation, analysis, application and ability to recall information as desirable abilities to develop and preserve which we should be careful relinquishing to Generative Artificial Intelligence (GenAI).

## 2. Methodology

This paper uses qualitative research methodology, including a scoping review and discourse analysis. Inclusion criteria were employed to sift papers that contribute directly to the issues, especially those papers not older than four years, except in two cases, while exclusion was used to remove much older papers and those not directly related to the issues. The paper particularly leverages philosophical tools of analysis and argumentation. ChatGPT was employed to generate synthetic data on the opportunities of ChatGPT in ODE and higher education respectively. ChatGPT was chosen among other Large

Language Models (LLMs) because it seems to be the most ubiquitous and easily accessible. The reason ChatGPT was used is to model some of the recommendations of this paper. Given the hallucinative nature of ChatGPT (Alkaissi and McFarlane, 2023), its ideas were substantiated by relevant pieces of literature that allude to its opportunities.

### 3. Literature Review

#### Generative artificial intelligence (GenAI)

UNESCO (2023) describes GenAI as a form of artificial intelligence (AI) that, through automation, creates novel content in natural language and in a dialogical fashion after a prompt command. The content comes in symbolic forms that resemble human thinking. For example, texts, images, videos, music and software code. The training of GenAI makes use of data curated from various online sources; thus, it engages this data to produce material through a numerical assessment of words, images and other elements in the data it is being trained on to recognise, replicate and duplicate similar patterns.

While it can generate new materials, one of its limitations is its inability to produce novel ideas or solve existential problems, as it does not understand life issues or social objects, social institutions or human relations that promote languages. Consequently, in spite of its eloquence and swift response, GenAI is far from being trustworthy from errors and mistakes. Even OpenAI (2023), the creator of ChatGPT, arguably the most pervasive of GenAI tools, affirms that it cannot be relied on for accurate information. Consider the example:

| COLUMN 1                                                                                                                                                                                              | COLUMN 2                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>What are the opportunities of using chatGPT in open and distance education?</i>                                                                                                                    | <i>Can you tell me the opportunities of using Generative AI in Higher education?</i>                                                                                                                         |
| <i>Introduction</i><br><i>Using ChatGPT in open and distance education offers several opportunities, enhancing both the learning experience and educational outcomes. Here are some key benefits:</i> | <i>Introduction</i><br><i>Generative AI presents a multitude of opportunities in higher education, enhancing various aspects of teaching, learning, and administration. Here are some key opportunities:</i> |

|                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1. Personalized Learning</b></p> <p>ChatGPT can tailor educational content to individual students' needs, providing explanations and resources that align with their learning pace and style. This personalization can help address knowledge gaps and reinforce learning more effectively than traditional methods.</p> | <p><b>1. Personalized Learning</b></p> <p>Generative AI can create tailored educational experiences by adapting content to fit individual student needs, learning styles, and paces. This personalized approach can help address specific knowledge gaps and foster deeper understanding.</p>                                                           |
| <p><b>2. 24/7 Accessibility</b></p> <p>As an AI, ChatGPT is available around the clock, providing students with immediate assistance and support regardless of time zones or schedules. This continuous availability is particularly beneficial for distance learners who may need help outside regular office hours.</p>      | <p><b>2. 24/7 Tutoring and Support</b></p> <p>AI-powered tools can provide round-the-clock assistance, offering explanations, answering questions, and guiding students through complex concepts anytime, anywhere. This is particularly beneficial for students with diverse schedules and time zones.</p>                                             |
| <p><b>3. Interactive Learning</b></p> <p>ChatGPT can engage students in interactive dialogues, simulating a conversational learning environment. This interaction can make learning more engaging and help students better understand complex concepts through back-and-forth discussion.</p>                                  | <p><b>3. Interactive Learning Experiences</b></p> <p>AI can develop interactive simulations, virtual labs, and gamified learning activities that engage students more deeply than traditional methods. These interactive tools can help students grasp complex subjects through hands-on, experiential learning.</p>                                    |
| <p><b>4. Supplementary Instruction</b></p> <p>ChatGPT can serve as a supplementary instructor, offering additional explanations, answering questions, and providing further reading materials. This support can enhance students' comprehension and retention of course material.</p>                                          | <p><b>4. Content Generation and Enhancement</b></p> <p>Generative AI can assist educators in creating high-quality instructional materials, including lecture notes, presentations, quizzes, and multimedia resources. It can also enhance existing content by generating summaries, simplifying complex texts, and providing diverse perspectives.</p> |
| <p><b>5. Resource Curation</b></p> <p>The AI can assist in curating and recommending educational resources, such as articles, videos, and practice exercises, based on students' current understanding and interests. This curated approach can save students time and direct them to high-quality learning materials.</p>     | <p><b>5. Efficient Assessment and Feedback</b></p> <p>AI can automate the grading process for assignments and exams, providing instant, detailed feedback. This not only saves time for educators but also helps students quickly understand their mistakes and improve their performance.</p>                                                          |
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| <p><b>6. Language Support</b></p> <p><i>For non-native English speakers, ChatGPT can provide translations and explanations in multiple languages, helping to bridge language barriers and make content more accessible to a global student body.</i></p>                                                                                               | <p><b>6. Language Translation and Multilingual Support</b></p> <p><i>Generative AI can offer real-time translation and language assistance, making higher education more accessible to international students and those who speak different languages. This supports a more inclusive learning environment.</i></p> |
| <p><b>7. Automated Feedback</b></p> <p><i>ChatGPT can provide instant feedback on assignments and quizzes, helping students quickly identify and correct mistakes. This immediate feedback loop can accelerate learning and improve academic performance.</i></p>                                                                                      | <p><b>7. Research and Data Analysis</b></p> <p><i>AI can assist researchers by analyzing large datasets, identifying patterns, and generating insights. It can also help in literature reviews by summarizing vast amounts of academic papers and highlighting key findings.</i></p>                                |
| <p><b>8. Scalable Tutoring</b></p> <p><i>ChatGPT can scale to support large numbers of students simultaneously, offering tutoring and support that would be impractical for human instructors to provide on a similar scale. This scalability is crucial for open and distance education institutions with large, diverse student populations.</i></p> | <p><b>8. Enhanced Accessibility</b></p> <p><i>AI tools can improve accessibility for students with disabilities by providing alternative formats for content, such as text-to-speech, speech-to-text, and visual adjustments. This ensures that all students have equal opportunities to succeed.</i></p>           |
| <p><b>9. Cost-Effective Solution</b></p> <p><i>Implementing ChatGPT can be a cost-effective solution for providing high-quality educational support. It can reduce the need for extensive human tutoring and administrative resources, lowering operational costs for educational institutions.</i></p>                                                | <p><b>9. Administrative Efficiency</b></p> <p><i>AI can streamline administrative tasks such as admissions, scheduling, and record-keeping. This automation can reduce the administrative burden on staff, allowing them to focus more on student engagement and support.</i></p>                                   |
| <p><b>10. Data-Driven Insights</b></p> <p><i>ChatGPT can help educators gain insights into students' learning patterns and common difficulties through data analysis. These insights can inform curriculum development and targeted interventions to improve overall educational outcomes.</i></p>                                                     | <p><b>10. Career Guidance and Skill Development</b></p> <p><i>Generative AI can offer personalized career advice based on a student's interests, strengths, and academic performance. It can also recommend skill development resources and courses to prepare students for their desired career paths.</i></p>     |
| <p><b>11. Support for Special Needs</b></p> <p><i>ChatGPT can be tailored to support students with special needs by providing accessible</i></p>                                                                                                                                                                                                       | <p><b>11. Fostering Collaboration</b></p> <p><i>AI can facilitate collaboration by connecting students with peers, mentors, and experts</i></p>                                                                                                                                                                     |

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>content and interactive learning experiences designed to accommodate various learning disabilities and preferences.</i>                                                                                                                                 | <i>based on their academic interests and project needs. This can enhance networking opportunities and collaborative learning experiences.</i>                                                                                                                                                            |
| <b>12. Encouraging Lifelong Learning</b><br><i>By making education more flexible and accessible, ChatGPT encourages lifelong learning, allowing individuals to pursue education and professional development at their own pace throughout their lives.</i> | <b>12. Predictive Analytics for Student Success</b><br><i>AI can analyze student data to predict academic performance and identify those at risk of falling behind. Early intervention strategies can then be developed to support at-risk students and improve overall retention and success rates.</i> |
| <b>Conclusion</b><br><i>Incorporating ChatGPT into open and distance education systems can significantly enhance the educational experience, making learning more personalized, accessible, and efficient for students worldwide.</i>                      | <b>13. Innovative Teaching Methods</b><br><i>AI can support innovative teaching approaches, such as flipped classrooms, by providing dynamic content and interactive learning activities that students can engage with outside of traditional lecture times.</i>                                         |
| <i>Source: ChatGPT.</i><br><br><i>Editor note: for generating the AI output, the prompt(s) input(s) provided to the model to elicit the set of specific responses can be found above in bold typeset.</i>                                                  | <b>14. Ethical and Critical Thinking Skills</b><br><i>Generative AI can be used to present ethical dilemmas and complex scenarios that require critical thinking, helping students to develop important problem-solving and decision-making skills.</i>                                                  |
|                                                                                                                                                                                                                                                            | <b>15. Resource Optimization</b><br><i>AI can help universities optimize the use of resources, such as allocating classroom spaces more efficiently and managing energy consumption, contributing to cost savings and sustainability efforts.</i>                                                        |
|                                                                                                                                                                                                                                                            | <b>16. Emotional and Mental Health Support</b><br><i>AI can offer emotional support by providing resources for stress management and mental health. It can also identify signs of distress in students and suggest appropriate interventions or referrals to counseling services.</i>                    |
|                                                                                                                                                                                                                                                            | <b>17. Global Collaboration and Learning</b><br><i>Generative AI can connect students and faculty from around the world, facilitating global learning experiences and cultural exchanges that enrich the educational environment.</i>                                                                    |

An analysis of these responses shows that there are opportunities for a range of persons: students, teachers, researchers, and administrators, but with a much higher focus on students. In column one, all but three (language support, cost-effective solution, data-driven insights) of the responses focus exclusively on students. In the second column, which focuses on higher education, all but five responses bother on students. Others are on educators, administrators, and teachers.

Number 6 of the first column pertains to walking with a new learner of English to learn better and overcome obstacles that new language learners usually encounter. This ability is corroborated by Vaccino-Salvadore (2023), that the advent of chatGPT has heralded novel advantages for new language learners. She, however, also noted that with such an opportunity of language support comes several ethical issues, such as hampered academic integrity, access, and authenticity. The reliability of information generated by LLMs due to the risk of disinformation, misinformation, and hate speech (Vaccino-Salvadore, 2023) is another issue. Similar thoughts on issues of academic dishonesty and the probable effect on critical thinking skills are also echoed by Michel-Villarreal et al. (2023). However, Stahl and Eke (2024, 1) listed other ethical concerns such as “social justice, individual autonomy, cultural identity, and environmental issues.”

While Number nine focuses on providing excellent support for education at a lesser cost, number ten is about how ChatGPT assists educators in understanding how students learn and the challenges they encounter, which are pertinent for curriculum development and targeted areas for better interventions and educational outcomes.

Dempere et al. (2023) highlighted most of the benefits identified from the prompt and its higher focus on students in addition to discussing attendants' risks and challenges. Samala et al. (2024) equally highlighted individualised assessment, personalised learning, immediate comment, and better availability as some of the merits of using ChatGPT and diminished or absence of emotional intelligence, the likelihood of over-dependence, and privacy issues as some of the demerits. Rashid et al. (2024) discussed the opportunities of LLM in all levels of education. At the primary level, it has the potential to improve reading and writing skills through syntax and

grammatical suggestions. At the secondary level, it could help in acquiring and mastery of new language, likewise in preparing for assessments and assignments. It primarily supports research at the university level because of its swift, ready-made response to prompts and the huge amount of information at its disposal. Resnik & Hosseini (2024) discuss some of the challenges including inaccuracy, bias, and absence of moral agency (Resnik and Hosseini 2024).

Sebastian (2023) equally examined the challenge of a potential violation of students' rights to privacy and the protection of sensitive data when interacting with AI models. Bishop (2017) highlighted the main ethical issues in data analytics, including privacy, lack of informed consent, identification/anonymisation, and digital imbalance. Nonetheless, Jaap Wieringa et al. (2021) argue that data analytics and privacy are not oxymoronic because there are various ways to implement data analytics without violating privacy rights.

Beyond these, the issue of academic integrity is a significant ethical concern in the use of GenAI in higher education. Using ChatGPT raises issues related to academic dishonesty, such as cheating and misuse, where technology is exploited to generate plagiarised content or complete take-home assignments and exams, thus complicating instructors' efforts to accurately assess students' understanding of the material (Bin-Nashwan, Sadallah, and Bouterraa 2023). Another challenge lies in the inherent biases within the training data of LLMs, which can perpetuate stereotypes, discrimination, and prejudice (Kasneci, Seßler, and Küchemann et al 2023). Accessibility is another critical issue, as varying internet availability across different regions can exacerbate educational inequalities, counteracting the goal of global social justice in education (Nguyen et al. 2023). Additionally, the widespread use of GenAI could lead to significant job losses and debates about classifying AI-generated outputs as art (Pavlik 2023).

Further concerns regarding ChatGPT include its lack of human interaction, limited comprehension, inherent biases, dependency on data, and privacy issues (Li et al. 2023,). Despite these ethical issues, Celik (2023) argues that the potential of AI in education has not been fully realised, with significant



underuse and occasional misuse observed (Lameras and Arnab 2022). Although there have been calls for increased adoption of AI in education (Holmes 2023), some educators resist using software that collects extensive student data and are sceptical of technology as a universal solution to educational challenges (Stockman and Nottingham 2022).

Mills, Bali, and Eaton (2023) note the lack of comprehensive information on AI use in education and advocate for more systematic engagement. They recommend establishing communities of practice focused on AI tools to promote resource sharing and societal dialogue about AI's future. They further suggest that responses to AI should be provisional and subject to continuous reflection and revision based on core values and educational philosophies (Mills et al., 2023). This idea is echoed by Cooper (2023), who points out the ongoing debate about defining AI, emphasising that while machines are efficient at processing large data sets, they do not possess human intelligence and should not be regarded as superior to humans.

Torres, Zapata-González, and Ortego-Hernando (2023) examine the impact of ChatGPT on students, faculty, and educational institutions. While there is limited empirical evidence linking its use to dishonest behaviours among students, the paper highlights instances where students use chatbots to complete writing assignments, cheat on exams, and engage in plagiarism, leading to a dependence on AI that undermines critical thinking. For faculty, the proliferation of AI tools like ChatGPT exacerbates the digital divide, induces anxiety about potential job replacement or changes in their roles, and facilitates unethical practices such as self-plagiarism, data fabrication, and result manipulation to meet publication pressures. For institutions, ChatGPT can enhance administrative efficiency and serve as a data analytics tool to predict and monitor student recruitment, retention, dropout rates, and performance.

Yusuf et al. (2024) examine the multicultural impact of GenAI on teaching in higher education institutions. It finds no clear link between cultural dimensions and technology acceptance, as individualist and collectivist cultures (according to Hofstede's cultural dimensions) interact with GenAI. Despite this, the paper suggests that GenAI policies should be tailored to fit

cultural contexts. Wang et al. (2023), in a study of 100 top-tier universities regarding the use of ChatGPT, shows that universities are responding and adapting to the use of GenAI, with most institutions proactively upskilling their faculty by offering various learning resources and training programs. However, the study reveals a cautious yet open approach due to concerns over ethics, privacy, and accuracy. The paper advises educational policymakers to avoid one-size-fits-all approaches and instead develop GenAI policies tailored to specific disciplines while carefully managing sensitive information. Wibowo et al. (2023) stress that the human interface with the learner plays an indispensable role. Wisdom, it argues, is needed in the incorporation of technology and one that prioritises the specific needs of education that incorporate teachers throughout the life cycle of an AI system.

Johnson et al. (2024) surveyed 2555 students' perspectives on the use of reports. Most of the respondents, 41.1%, opined that the university must clearly state a policy guide on the appropriate and inappropriate use of AI technologies by the surveyed students; most 54.1% were positively disposed or somewhat disposed to employing a tool like Grammarly. Meaningless, 70.4% were not positively disposed to using a tool like ChatGPT for writing their whole essay, while learners with superior confidence in their academic writing prowess have a lower probability of employing them to write with the probability of being less supportive of their peers who use them. Michel-Villarreal et al. (2023) equally note the need for explicit policies or regulatory frameworks for the responsible and accountable use and integration of ChatGPT and other similar tools.

Beyond these ethical concerns, there are also legal challenges that the use of GenAI poses. Intellectual property rights present significant challenges for AI in education. A key legal question is whether AI can create or own a patent. In 2023, the US Supreme Court declined to hear a case brought to its Patent and Trademark Office involving the issuance of a patent to create a Device for the Autonomous Bootstrapping of Unified Sentence (DABUS), an AI system said to have independently created unique examples. The court's decision reinforced the traditional idea that only human inventors can receive patents, ruling out the possibility of AI systems being recognised as inventors

(Brittain, 2023). It is, however important to note that a South African court had in July 2021 granted a patent to the same DABUS (IPWATCHDOG 2021). The question of copyright and authorship of AI-generated content has sparked a robust and ongoing debate. The crux of the matter is whether an AI system can be considered the author and copyright owner of the content it generates. This debate underscores the need for a clear legal framework that considers the unique nature of AI systems and their relationship with human creators (Copping & Ezra, 2023).

One of the key concerns in the realm of AI and intellectual property rights is the issue of copyright infringement. Given the vast amount of content AI systems are trained on, which often includes copyrighted material, proper attribution of AI-created works is crucial. This respects intellectual property rights and ensures transparency in using AI in education. Additionally, the question of liability for AI outputs remains a complex issue due to their automated nature (Ahuja, 2023).

## 4. The Challenge of Techno-Solutionism

Aside from the myriad of challenges discussed above that accompany the opportunities embedded in the use of GenAI in education, there is an emerging form of challenge captured by the term ‘techno-solutionism’ (Ts). Techno-solutionism refers to the lofty idea that everything can be solved using technology. The term is attributed to Evgeny Morozov in his text *To Save Everything, Click Here: The Folly of Technological Solutionism*, where he discussed how the predictions of the internet as a slippery slope resembles that of the telephone at its emergence that the telephone would bring about peace since religious and political leaders would be able to talk directly to one another. The bloody wars of that century had since made such forecast null and void.

Ts can also be described as a hyperbolic and uncritical faith in technology use, especially one that sees technology as neutral, value-free, intrinsically good, and the solution to all humanity's problems. It is similar to techno-fix, which conceives technology as an antidote to societal issues with bare minimal involvement of the right stakeholders, such as political authorities.

Techno-fix tends to be superficial as it does not seek to change social norms that underlie social problems. Ts is similar to techno-optimism and techno-chauvinism the belief that practically all problems can be resolved given the correct configuring and engineering.

The phenomena of techno-solutionism and its impact on academic integrity is another form of challenge found in the GenAI. Hoffman (2024) reports that 66% of learners admit to using GenAI writing tools, and 25% of the learners use them once a week. It was observed that learners who expressed confidence in their writing skills use AI tools less frequently and use them minimally compared to those who expressed lower confidence. Given that AI will continue to affect writing, reading and text production, more research should be conducted on specific support in these areas.

Prillaman (2024), in a study of over 1600 scientists, reports that nearly 30% use GenAI to write papers, and 15% use it in grant applications. Koplin (2024) reports the prevalence of the phrase 'As an AI language model' in papers found on Google Scholar, indicating an extremely poor use of AI writing tools to generate papers. Another indicator that researchers are employing AI to write papers is the overuse of certain words like 'transformative', 'commendable', 'meticulous', 'intricate', a pointer to adjectives most commonly used in the country the AI model was trained.

Liang et al. (2024), in an analysis of 950,965 papers produced between the years 2020 and 2024, revealed that LLMs are widely used in academic writing, with the most rapid and mammoth growth of 17.5 found in Computer Science. Another report on 13,000 analysed papers on arXiv indicates a sudden increase of 200.42%, 44.68% and 22.04%, respectively, in Computer Science, Physics and Mathematics in papers published in January 2019 and those published in November 2023 (Jacob 2024).

Blatant use of LLM to generate paper indicating techno-solutionism is further observed in a paper published by Elsevier where the LLM phrase:

“ In summary, the management of bilateral iatrogenic  
I'm very sorry, but I don't have access to real-time  
information or patient-specific data, as I am an AI language

model. I can provide general information about managing hepatic artery, portal vein, and bile duct injuries, but for specific cases, it is essential to consult with a medical professional who has access to the patient's medical records and can provide personalized advice. It is recommended to discuss the case with a hepatobiliary surgeon or a multidisciplinary team experienced in managing complex liver injuries (Bader et al. 2024, 2111).

The blatant use of AI in scientific papers is partly attributed to Wiley's closure of 19 journals over issues of subverting academic and publication integrity for financial gains. The prevalence and advanced nature of GenAI are not the only ways it contributes to the crisis in publication; the use of AI bolsters fraudulent writing (Claburn 2024). The apprehension over research integrity was earlier echoed by Nature when it stated that up to a quarter of clinical trials are fraught with fabrication issues (Noorden, 2023).

There are still some questions for which there are no satisfactory group responses: Can we ensure that reliance on AI does not lead to generations progressively outsourcing more of their mental faculties to machines? How might we combat techno-solutionism amongst learners and researchers, and why is combating it desirable?

## **5. Combating Techno-solutionism to Bolster Academic Integrity**

What kind of society do we want? What kind of society does technology drive? What lines should we draw regarding leveraging AI's capabilities and ensuring the development and preservation of human skills?

While the UNESCO Regulations (2021) and Guidance (2023) detail the AI ethics principles and the use of GenAI for teaching and research, with both

emphasising human-centeredness, there is a need to set clear green lines and red lines<sup>2</sup> on the use of AI in academics. Green lines pertain to

- I. a clear limit on use - distinctly stating or recommending what aspects of academic endeavours, be it writing, teaching and research the use of AI tool is encouraged or permitted and what percentage similar to plagiarism score is acceptable. This is important for the development/sustenance of mental abilities, and also to encourage academic honesty and minimise overreliance and misuse. For instance, is it acceptable when a learner or faculty uses AI to paraphrase or summarise?
- II. a statement on transparency on whether or not AI was used to generate any aspect of a work, the aspect in which it was used, how it was used and why it was used.
- III. a Hippocratic oath for AI that it has been employed (ethically) respecting some of the stated parameters or for developers to design ‘good’ AI.
- IV. employing AI as a collaborative critical thinking tool in a methodology class where learners are exposed to its use, critique its outputs, and as a means to an end, the end is using it in an ethical and academically honest manner

It is important to clarify whether using a writing tool like Grammarly constitutes writing with AI. Or whether accepting suggestions from AI constitutes writing with it. We must address the normative challenge of determining what constitutes AI plagiarism.

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<sup>2</sup> I conceive a green line in this context as an acceptable or desirable threshold of AI and its usage and red lines as the converse of the green lines, particularly as it relates to measures that ought to have been built into an AI system during its design, development, and training prior to deployment. Unfortunately, the details of some of these ideas are beyond the scope of this paper.

*What essential cognitive capabilities should humans master although AI can perform such?*

Here, I borrow from the cognitive domain of Benjamin Bloom’s (2001) taxonomy of educational objectives, which classifies educational learning objectives into various degrees of specificity and complexity in the discourse.

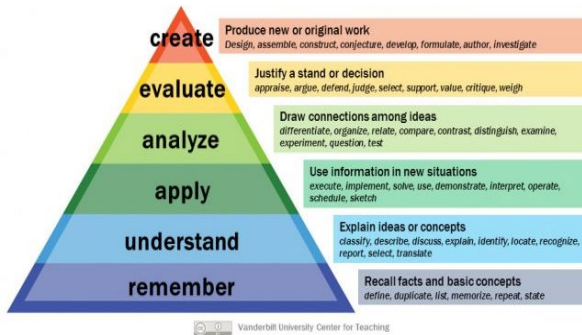


Figure: Armstrong, P. (2010). Bloom’s Taxonomy. Vanderbilt University Center for Teaching. Retrieved [July 2024] from <https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/>

Employing these domains is helpful for both the faculty and learners. It helps teachers rethink assessment and their own questioning and engagement with AI tools. These are also desirable abilities for learners to acquire.

Some red lines are the direct converse of the above green lines. Nonetheless, Olojede (2023) argues that certain red lines should be embedded into the AI system during the conception, design, and development of GenAI systems and not after deployment. The kind of output that we desire and the undesirable outputs should be determined and built into the system during the development and consequent fine-tuning stages.

Some of these ideas find their roots in the critical theory of technology.

## 6. Critical Theory of Technology

Critical theory of technology draws from the Frankfurt School of Critical Theory and Science and Technology Studies (STS). The main idea Andrew

Feenberg grapples within his critical theory pertains to the politics of technology design in the question of whether, as humans, we must surrender to the machination of machines or remodel technology to serve us its creators better. His theory of technology is largely an ecumenism of past theories; epitomising democratic socialist philosophy as it often alluded to authors such as Marx, Weber, Habermas, Foucault, Lukács, Marcuse, Hegel, etc., with each serving a distinct purpose in his own theory. Critical theory of technology (CTT) addresses the menace the technocratic system prevalent in modern societies poses to human agency. Technology is Janus-faced; one side has the operator, and the other has the object (Feenberg 2005).

However, the operator and the object are both human beings, but operational power makes the difference in the technical action. When the organisation of a society revolves around technology, technological power is, thus, the ultimate type of power in that society. This type of power comes to be through designs that restrict the scope of interests and concerns that should be considered in the standard workings/operation of the technology and the social institutions it serves. This restriction disrupts the order of experience and brings about human suffering with destruction to the ecosystem. Feenberg weaves together ideas and concepts such as Self-realisation, alienation, ambivalence instrumentalisations, autonomy and the like (Feenberg 2005). CTT accepts STS' position regarding the non-universality of technology and its value-laden nature. It, therefore, proposes a clear theory of “democratic intervention” (Feenberg and Grimes 2017, 11) into technology.

The critical theory of technology argues for the public's participation in technological policy decisions, emphasising the need to critique rationality in modern culture. This emphasis sets CTT apart from STS, as this is one of the themes of the Frankfurt school. The theory is against determinism and positivism, stressing the important role of interpretation in developing technologies. It considers how technical networks shape identities and worlds.

CTT discusses the bias of technology. It repudiates empiricism and methodological individualism which creates a path to recovering



fundamental social thoughts which aids the understanding of the conflict between persons and rationalised society. The actions the citizens take as their involvement in CTT are referred to as democratic interventions. The majority of these happen after the deployment of technologies. The world has witnessed many of the prevalent examples since the release of ChatGPT by OpenAI in November of 2022 in regulations and counter regulations and proposals/policies for regulating its use.

Another type of intervention concerns an innovative engagement with technology, integrating the reactivation of gadgets by users to meet sudden exigencies. This mode played a significant part in the evolution of the internet. A third way of intervention demands acting before the deployment of technologies. It pertains to public/mass participation or “citizen juries.” (Grimes and Feenberg 2017, 11) to assess prospective innovations and collaborate in the conceptualisation and design processes. In these instances, authorities solicit the participation of persons, before technologies are released, instead of seeking ways to remedy the situation post-deployment (Kirkpatrick 2020).

Critical theory of technology has its critiques and criticisms. It is critiqued as not considering empirical studies that detail the actual place of the computer in the world and the equilibrium between being oppressive and empowering. Given this may not appeal much to empiricist and empirical research it does not seem to have added much to the discourse (as in the work of Andrew Feenberg’s Critical Theory of Technology, 1991/2002). Feenberg, however, should be commended for his synthesis of the works on critical theory and its application to technological questions.

## 7. Conclusion

Maintaining academic integrity in a digital world and publish or perish academic culture seems an uphill battle. This paper examines techno-solutionism’s place in using artificial intelligence in open and distance education. Thus, this paper has discussed the opportunities and challenges of GenAI use in open and distance education. It particularly discusses the challenge of techno-solutionism in education and the various ways it impacts

research integrity. Leveraging the critical theory of technology and borrowing Bloom's taxonomy, the paper proposes ways to combat the discussed challenges by recommending clear guidelines and limits on use and considering the end users during the design of the systems. All these are to uphold academic integrity and to develop/maintain desirable cognitive abilities.

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## 9. Short biography

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